Amendments to the Specification:

Please replace paragraph beginning at page 3, line 3, with the following rewritten paragraph:

-- The current invention provides a method and apparatus for communicating two or more channels of DMT modulated data within the same frequency spectrum, thus providing symmetrical bandwidth for upstream and downstream communication across a communication medium. The apparatus may be used for dual channel or multi-channel communications. The method may be implemented on a physical modem or a logical modem with the logical modem including a digital signal processor (DSP) coupled to an analog front end (AFE). The communication medium may include: wired, wireless and optical. Orthogonality in either the time or frequency domains is injected into the individual symbols associated with each DMT tone set or between successive tone sets using a unique code, e.g. Walsh code, assigned to each transmitted channel. The mutual orthogonality of these codes allows two or more channels to be supported in either an upstream or downstream direction using a DMT line code, in connection with any of the various X-DSL protocols including: G.Lite, ADSL, VDSL, SDSL, MDSL, RADSL, HDSL, etc. --

Please replace paragraph beginning at page 16, line 6, with the following rewritten paragraph:

--In FIG. 7A multiple access via frequency domain redundancy is implemented using the DMT line code as discussed above in FIG. 6B. In this embodiment the incoming data stream is framed in framer 440A. Individual portions of the framed data are allocated to a corresponding tone bin by the tone orderer 442A and passed to the DMT tone encoder 444A where they are mapped to a DMT symbol and expressed as a complex number. In the example shown the number of DMT tones processed in each tone set by the tone ordered 442A is two shown within the frame boundaries 700A-702A. The two DMT tones are labeled A_1, A_0 with A_0 the first of the DMT symbols to be transmitted. Redundancy in the frequency domain is injected to this set of tones by appropriate switching of the Walsh encoder 342A in accordance with the selected Walsh code driving the demultiplexer 710A and multiplexer

712A which switch each incoming symbol of the symbol set from a non-inverted path 718A to an inverted path 716A which includes inverter 714A. This implements redundancy R of order 2 in the frequency domain for a total of RN tones, in this case 4 within a single tone set. The encoder generates a tone set with twice the number of tones per tone set as input as shown within frame boundaries 704A-706A. In the example shown these are: $-A_1$, A_1, $-A_0$, A_0, for a total of 4 DMT symbols. The sign convention corresponds with a Walsh code of +/- 1s assigned to DSP 218A for transmission of data. The Walsh code for the DSP 218B is orthogonal to that assigned to DSP 218A. The sequence of DMT tones transmitted by that modem is: B_1, B_1, B_0, B_0. The decoders 338A-B include corresponding buffers 722A-B and 720A-B, along with summers ~~724A-B~~ 724-A1, subtractor 724-A2 and corresponding dividers 726A-B. The decoder accepts 4 DMT symbols each of which includes contribution from both the transmit path of the opposite modem as well as from Self NEXT from the modems own transmitter with which the DMT tone set is shared. In the example shown the received tones are: A_0+B_0, $-A_0+B_0$, A_1+B_1, $-A_1+B_1$. The decoder decodes the incoming sets of tones redundant in the frequency domain. The redundancy and coding is established during session set up for each channel. The redundancy is removed and the appropriate received DMT symbol sets B_0, B_1 are passed to the tone decoder 428A for decoding. The tone reorderer 430A performs reordering of the tones and the deframer 434A deframes the DMT symbols. On the receive path of the opposite modem the decoder 338B decodes with an orthogonal Walsh code. In alternate embodiments of the invention redundancy in the frequency domain may be implemented at the tone orderer. In alternate embodiments of the invention code sequences other than Walsh coding may be implemented to introduce orthogonal redundancy into the channels which share a common set of DMT tones.—

Please replace paragraph beginning at page 17, line 5, with the following rewritten paragraph:

--In FIG. 7B multiple access via time domain redundancy is implemented using the DMT line code as discussed above in FIG. 6C. In this embodiment the incoming data stream is framed in framer 440A. Individual portions of the framed data are allocated to a corresponding tone bin by the tone orderer 442A and passed to the DMT tone encoder 444A

where they are mapped to a DMT symbol and expressed as a complex number. In the example shown the number of DMT tones processed in each tone set by the tone ordered 442A is two shown within the frame boundaries 700A-702A. The two DMT tones are labeled A_1, A_0 with A_0 the first of the DMT symbols to be transmitted. Redundancy in the time domain is injected to this set of tones by appropriate switching in accordance with the selected Walsh code of the Walsh encoder 342A. An additional multiplexer 720A and input buffers 720A-722A have been added to the encoder enabling it to implement redundancy R of order 2 in the time domain. The encoder 342A generates two tone sets with the same number of tones as the input tone set for a total of RN tones, in this case 4. In the example shown these are: $-A_1$, A_0 in a second tone set with boundaries 732A-734A and A_1, A_0, in a first tone set with boundaries 730A-732A. The sign convention corresponds with a Walsh code of +/- 1s assigned to DSP 218A for transmission of data. The Walsh code for the DSP 218B is orthogonal to that assigned to DSP 218A. The sequence of DMT tones transmitted by that modem is: B_1, B_1, B_0, B_0. The decoders 338A-B include corresponding buffers 722A-B and 720A-B, along with summers ~~724A-B~~ 724-A1, subtractor 724-A2 and corresponding dividers 726A-B. The decoder accepts 4 DMT symbols each of which includes contribution from both the transmit path of the opposite modem as well as from Self NEXT from the modems own transmitter with which the DMT tone set is shared. In the example shown the received tones are from first to last: A_0+B_0, $-A_0+B_0$, A_1+B_1, $-A_1+B_1$. The decoder decodes the incoming sets of tones redundant in the time domain. The redundancy and coding is established during session set up for each channel. The redundancy is removed and the appropriate received DMT symbol sets B_0, B_1 are passed to the tone decoder 428A for decoding. The tone reorderer 430A performs reordering of the tones and the deframer 434A deframes the DMT symbols. On the receive path of the opposite modem the decoder 338B decodes with an orthogonal Walsh code. In alternate embodiments of the invention redundancy in the time domain may be implemented at the output of the IDFT instead of the input as discussed above. In alternate embodiments of the invention code sequences other than Walsh coding may be implemented to introduce orthogonal redundancy into the channels which share a common set of DMT tones.--